

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-8 (Cancelled)

Claim 9 (Currently Amended): A polymer composition, comprising: a photodefinable polymer including a thermally decomposable sacrificial polymer and a photoinitiator, wherein the photoinitiator[[,]] is bis(2,4,6-trimethylbenzoyl)-phenylphosphineoxide.

Claims 10-13 (Cancelled)

Claim 14 (Previously Presented): A method for fabricating a structure comprising: disposing a photodefinable polymer composition onto a surface, wherein the photodefinable polymer includes a sacrificial polymer and a photoinitiator;

disposing a gray scale photomask onto the photodefinable polymer, wherein the gray scale photomask encodes an optical density profile defining a three-dimensional structure to be formed from the photodefinable polymer;

exposing the photodefinable polymer through the gray scale photomask to optical energy;

removing portions of the photodefinable polymer composition to form the three-dimensional structure;

disposing an overcoat layer onto the three-dimensional structure; and

decomposing the photodefinable polymer composition, thermally, to form a three-dimensional air-region.

Claim 15 (Original): The method of claim 14, wherein decomposing includes: maintaining a constant rate of decomposition as a function of time.

Claim 16 (Original): The method of claim 14, wherein decomposing includes: maintaining a constant rate of mass loss of the photodefinable polymer.

Claim 17 (Original): The method of claim 14, wherein decomposing includes: heating the structure according to the thermal decomposition profile expression

$$T = \frac{E_a}{R} \left[\ln \frac{A(l - rt)^n}{r} \right]^{-1}$$

where R is the universal gas constant, t is time, n is the overall order of decomposition reaction, r is the desired polymer decomposition rate, A is the Arrhenius pre-exponential factor, and E_a is the activation energy of the decomposition reaction.

Claims 18-19 (Cancelled)

Claim 20 (Currently Amended): A structure, comprising the three-dimensional air-region formed using the method of claim 14, wherein the three-dimensional air-region has areas with non-rectangular cross-sections.

Claim 21 (Currently Amended): A structure, comprising the three-dimensional air-region formed using the method of claim 15, wherein the three-dimensional air-region has areas with non-rectangular cross-sections.

Claim 22 (Currently Amended): A structure, comprising the three-dimensional air-region formed using the method of claim 17, wherein the three-dimensional air-region has areas with non-rectangular cross-sections.

Claims 23-27 (Cancelled)

Claim 28 (New): The structure of claim 20, wherein the areas with non-rectangular cross-sections of said three-dimensional air-region are tapered cross-sections.

Claim 29 (New): The structure of claim 20, wherein the three-dimensional air-region having areas with non-rectangular cross-sections is further defined by tapered corner regions.

Claim 30 (New): The structure of claim 21, wherein the areas with non-rectangular cross-sections of said three-dimensional air-region are tapered cross-sections.

Claim 31 (New): The structure of claim 21, wherein the three-dimensional air-region having areas with non-rectangular cross-sections is further defined by tapered corner regions.

Claim 32 (New): The structure of claim 22, wherein the areas with non-rectangular cross-sections of said three-dimensional air-region are tapered cross-sections.

Claim 33 (New): The structure of claim 22, wherein the three-dimensional air-region having areas with non-rectangular cross-sections is further defined by tapered corner regions.